Training at real or simulated high altitudes has become a hot topic, particularly since the controversy that led to disqualification of a Canadian contestant at the World Cycling Championships in Hamilton in 2003. Among the questions raised are these: Does such training enhance endurance performance? Is it an ethical way of gaining a competitive advantage over other athletes? And is the health of the individual endangered by such a practice?

Dr. Wilber then proceeds to a careful analysis of the many studies that have examined the success of training while at high altitude. He tabulates in considerable detail those which found enhanced performance, and the roughly equal number of studies in which neither performance nor oxygen transport was improved by low oxygen pressures. Although a considerable number of reports are now available, Dr. Wilber finds it impossible to reach an evidence-based conclusion as to the effectiveness of high altitude exposure. He identifies important causes of the inconclusive research, including intertrial differences in average initial fitness and hemoglobin status, a variety of training plans and recovery schedules, possible genetic influences of the HIF-1α complex on susceptibility to hypoxia, and, all too often, the absence of a control group or the use of a small sample size. In general, positive outcomes have been more likely when coaches have adopted the “living high/training low” protocol, particularly when complemented by hypoxic sleeping units and/or the use of supplemental oxygen during training sessions.

The third section of the book is devoted to practical applications of altitude training. Dr. Wilber presents specific details of the training programmes adopted, both by coaches at various high altitude camps and by permanent high altitude residents in countries such as Kenya. He also describes the “Nitrogen houses” developed in Finland and Sweden, and small hypoxic sleeping units such as the Hypoxico altitude tent. One technique which has been tried in Canada, but which
was not mentioned, was the simple expedient of inducing exercise hypoxia by having subjects re-breathe through a long tube while exercising. Despite the absence of hard scientific evidence of benefit from any of the hypoxic options, Dr. Wilber concludes with some recommendations and guidelines, based on current best practice. He suggests 8 to 10 hrs/day of exposure to hypoxia at an altitude range of 2100–2500 m and argues that if such treatment is maintained for at least 4 weeks, endurance performance is likely to be enhanced for up to 3 weeks postexposure.

A single page is devoted to the ethics of hypoxic training. This notes that the practice has been banned for the Salt Lake City and Athens Olympic contests. However, the text also seems to indicate the author’s acceptance of simulated altitude exposures. Formal mention of safety is limited to the comment that the IOC is currently planning to review both the ethics and safety of the practice. Nevertheless, elsewhere in the text there are brief paragraphs on the potential hazards of suppressed immune function, high altitude sickness, and splenic rupture.

The book is intended to appeal to a very broad audience, ranging from coaches and athletes to graduate students. Indeed, it appears that Dr. Wilber has done a very good job in providing the references and technical background that will satisfy the sport scientist, while keeping the basic text simple and practical enough to be understood by potential users of the high altitude training technique.